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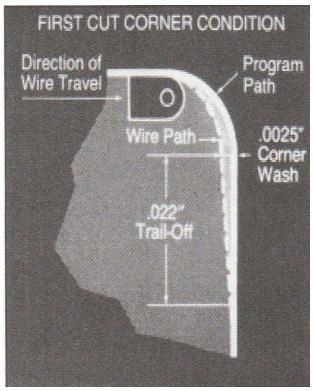
TENSILE STRENGTH

Does It Really Matter and If So Why?

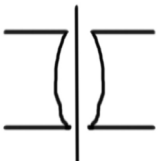
On the EDM machines Tensile Strength comes into play when talking about wall straightness. Even though the wire never contacts the workpiece the process of EDMing creates pressure against the wire from the sparks generated. This causes the wire to lag behind the guides slightly, the less tensile strength the wire possesses the more exaggerated this becomes. It increases dramatically as you increase the part height and forward push of the cut. This can cause a corner washout on the workpiece.



This lag, similar to a truck making a corner, causes the wire to “cut” the corner. This can range from a few tenths on skimming to a couple of thousandths on roughing cuts.

Newer EDM machines have reduced or eliminated this issue in using the processor to ‘look ahead” in the program and slow the EDM down as it enters the corner. This slow down allows the wire to catch up and swing the corner accurately.

A second condition that can exist is the “barrel” / “belly” effect caused by the wire vibrating within the cut. Normally occurring at the center of the workpiece and very noticeable on taller workpieces.



Now we are at the point where tensile strength comes into play and moves up the ladder of importance.

Lower tensile strength wires will always cut faster than high tensile strength wires. They allow for elongation and will flush better then higher tensile strength wires.

To remove or eliminate corner wash and barrel effects the wire tension should be set higher. This means that a high tensile strength wire is needed to assist in straight walls and accurate corners. Most importantly on skim cuts.

High tensile wires with the tensioning set to a higher limit will also assist in reducing vibration.

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